



MEIBOMIAN GLAND DYSFUNCTION AFTER PHACOEMULSIFICATION

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ABSTRACT

PURPOSE: Comparison of signs of dry eye due to meibomian gland dysfunction pre and post surgery by TBUT, Schirmer's test, Oxford fluorescein grade and Salisbury questionnaire.

MATERIALS AND METHODS: We conducted a prospective study at a tertiary care hospital. 90 patients to be undergoing cataract surgery were included. Informed consent was obtained from all patients after explaining the purpose, possible results and consequences of the study.

Patients were included from tertiary hospital having cataract and planning to undergo cataract surgery. Following tests TBUT, Schirmer's test, Oxford fluorescein grade and Salisbury questionnaire were done with informed consent both before, 1 week and 4 weeks after the surgery. Comparative analysis was done.

RESULTS: Tear film breakup time (seconds) in pre-operative was significantly reduced at post-operative 1 week and post-operative 4 weeks. Schirmer's test (mm) at pre-operative was significantly reduced at post-operative 1 week and post-operative 4 weeks. Proportion of patients with lid margin thickening:- thickened margins was significantly higher in post-operative 1 week and post-operative 4 weeks as compared to pre-operative. MG capping present was significantly higher in post-operative 4 weeks as compared to pre-operative. Distribution of Dew's severity grading was comparable between pre-operative and post-operative 4 weeks.

CONCLUSION: The high prevalence of dry eye symptoms after cataract surgery necessitates the need to evaluate it both pre and post operatively. Phacoemulsification alters function of meibomian gland thereby causing dry eye symptoms and ocular discomfort post operatively. In our study, the aggravation of dry eye due to obstructive MGD was revealed for a short interval of time postoperatively. Aggressive management of dry eye due to MGD with tear substitutes, anti-inflammatory and antibiotics is effective in reducing symptoms of dry eye before and after cataract surgery. To achieve optimum patient compliance and quality of life post-operatively, screening of dry eye should be made a part of the protocol for pre operative evaluations.

KEYWORDS: TBUT, Schirmer's Test, Oxford Fluorescein Grade, Salisbury Questionnaire

INTRODUCTION

Meibomian gland dysfunction, or posterior blepharitis, is a condition of meibomian gland obstruction and is the most common cause of evaporative dry eye. The meibomian glands are modified sweat glands and are of holocrine type. Secretions from meibomian glands are oily in nature. The tear film lipid layer is comprised of meibum, attached with the help of intercalated proteins.

In a study conducted by Basak PL et al, it was found that MGD had a prevalence of 31.7% in a hospital based population. [1]

There are studies showing aggravation of dry eye symptoms due to meibomian gland dysfunction after cataract surgery[2].

The effect of cataract surgery on MGD is that cataract surgery seems to alter the function of the meibomian glands (post-op inflammation) without accompanying structural changes.

The Schirmer test is a useful assessment of aqueous tear production. The test involves measuring the amount of wetting of a special (no. 41 Whatman) filter paper, 5 mm wide and 35 mm long. An unstable tear film is the hallmark of dry eye. There are invasive and noninvasive techniques to assess the stability of the tear film. Tear film stability is measured by the tear break-up time (TBUT) test. It is the most important, and practical test for diagnosing dry eye. Fluorescein assesses the intactness of the epithelial barrier and stains only if cellular membrane disrupts or cell-cell junction loss is present. The presenting symptoms

of dry eyes are obtained through a validated Dry eye study questionnaire (Salisbury Eye Evaluation) of ocular symptoms related to dry eye.

MATERIALS AND METHODS

We conducted a prospective study at a tertiary care hospital. The patients included in the study were those who underwent uneventful, uncomplicated cataract surgery by phacoemulsification by a single surgeon under similar protocol. 90 patients were included. Informed consent was obtained from all patients after explaining the purpose, possible results and consequences of the study. Every alternate day one patient operated for phacoemulsification by the same surgeon was selected till sample size of 90 was achieved using the Daniel sample size formula. Following tests were done both before, 1 week and 4 weeks after the surgery. Comparative analysis was done.

The presenting symptoms of dry eyes were obtained through a validated Dry eye study questionnaire (Salisbury Eye Evaluation) of ocular symptoms related to dry eye and graded accordingly. Slit lamp examination of eyelids for lid margin thickening and the gland orifices for capping. Tear film break-up time was measured. The BUT is the interval between the last blink and the appearance of the first randomly distributed dry spot. A BUT of less than 10 seconds is suspicious.

The development of dry spots always in the same location may indicate a local corneal surface abnormality (e.g. epithelial basement membrane disease) rather than an intrinsic instability of the tear film.

Schirmer's test was done - Less than 10 mm of wetting after 5 minutes without anaesthesia or less than 6 mm with anaesthesia is considered abnormal.

Fluorescein staining, using the Oxford grading scheme, is the standard method used for the diagnosis of dry eye disease. Severity of staining was quantified using a chart comprising a series of panels, labeled A-E, of increasing severity.

The patients were graded (acc to DEWS classification) based on history and examination.

Patients were asked to do their post op follow up visits regularly. All the following parameters were studied both before and after cataract surgery. The parameters were recorded only at 1 week post op and 4 weeks post op visit.

STATISTICAL ANALYSIS

TBUT and schirmer's test are compared based on paired T test. Fluorescein oxford grade, DEWS severity grade and salisbury questionnaire grade are compared based on chi square test.

RESULTS

The study was conducted in department of Ophthalmology at a tertiary care hospital. 90 patients between age group 50- 70 years of age with a clinical diagnosis of cataract to be posted for cataract surgery by phacoemulsification were included in

the study. Pre and post surgery TBUT and Schirmer's test was taken and results are as follows. 47(52.22%) patients belonged to age group 61-70 years. Age group was 51-60 years of only 43 out of 90 patients (47.78%). Mean value of age(years) of study subjects was 60.33 ± 6.5 with median(25th-75th percentile) of 61(55-66).

Mean \pm SD of tear film breakup time(seconds) in pre-operative was 10.31 ± 1.99 which was significantly reduced at post-operative 1 week (6.74 ± 2.32 , p value<.0001) and post-operative 4 weeks (8.22 ± 2.27 , p value<.0001).

Proportion of patients with fluorescein stain:- grade 0, grade 1 was significantly higher in pre-operative as compared to post-operative 1 week (p value<.0001) and post-operative 4 weeks (p value<.0001). (Grade 0:- 35.56% vs 0%, 14.44% respectively, Grade 1:- 52.22% vs 21.11%, 36.67% respectively). Proportion of patients with fluorescein stain:- grade 2 was significantly higher in post-operative 1 week and post-operative 4 weeks as compared to pre-operative. (Grade 2:- 36.67%, 40% vs 12.22% respectively). Proportion of patients with fluorescein stain:- grade 3 was significantly higher in post-operative 1 week as compared to pre-operative. (Grade 3:- 36.67% vs 0% respectively).

Mean \pm SD of schirmer's test(mm) at pre-operative was 10.87 ± 2.45 which was significantly reduced at post-operative 1 week (6.97 ± 2.14 , p value<.0001) and post-operative 4 weeks (8.91 ± 2.42 , p value<.0001).

Proportion of patients with lid:- normal was significantly higher in pre-operative as compared to post-operative 4 weeks (p value=0.0006). (Normal:- 60% vs 47.78%, 34.44% respectively). Proportion of patients with lid:- abnormal was significantly higher in post-operative 4 weeks as compared to pre-operative. (Abnormal:- 65.56% vs 40% respectively).

Distribution of normal and abnormal lid was comparable between pre-operative and post-operative 1 week. (p value=0.1)

Proportion of patients with salisbury questionnaire grading:- grade 2 and 3 was significantly higher in post-operative 1 week and post-operative 4 weeks as compared to pre-operative.

Distribution of Dew's severity grading was comparable between pre-operative and post-operative 4 weeks. (p value=0.112)

DISCUSSION

There was a high prevalence of MGD in patients screened for dry eye before cataract surgery. Even patients with healthy eye before cataract surgery had dry eye symptoms after surgery. Development and aggravation of MGD was noted in patients after surgery. Consistent with our study, we found significant changes in lid margin, schirmer's test, tear film break-up test, fluorescein staining and symptomatic salisbury questionnaire for dry eye and thus DEWS grading postoperatively. These results suggest that cataract surgery may worsen the function of meibomian gland post operatively.

Few studies have reported increased symptoms and signs in the immediate postoperative period (7-15 days), while others have reported return to normalization of the tear film and ocular surface after the first month or even later as demonstrated in a study done by Cetinkaya S et al [3]. Study done by Patil M et al [4] demonstrated that the mean Schirmer's I test (without anaesthesia) values also showed statistically significant change in the pre and postoperative values with the least values in the first postoperative visit. Similar findings were found in the study done by Jayshree et al [5]. The mean TBUT value was also reduced post operatively with a statistically significant difference. The reduction was, like the other two tests found to be the most during the first postoperative visit. TBUT was also found reduced in earlier studies as demonstrated in a study done by Venugopal KC et al [6].

In our study, mean \pm SD of tear film breakup time (seconds) in pre-operative was 10.31 ± 1.99 which was significantly reduced at post-operative 1 week (6.74 ± 2.32 , p value < 0.0001) and post-operative 4 weeks (8.22 ± 2.27 , p value < 0.0001).

Proportion of patients with normal lid was significantly higher in pre-operative as compared to post-operative 4 weeks with p value of 0.0006. Proportion of patients with thickened lid margins was significantly higher in post-operative 1 week and post-operative 4 weeks as compared to pre-operative. MG capping present was significantly higher in post-operative 4 weeks as compared to pre-operative. Distribution of Dew's severity grading was comparable between pre-operative and post-operative 4 weeks with p value of 0.112.

Few limitations of the study

The number of subjects taken was small so proper representation of general population group could not be done.

Study was done for a short duration i.e. upto 4 weeks postoperatively. The status of dry eye later to this wasn't considered.

Single reading of TBUT cannot be considered a constant parameter as the readings might change throughout the day.

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